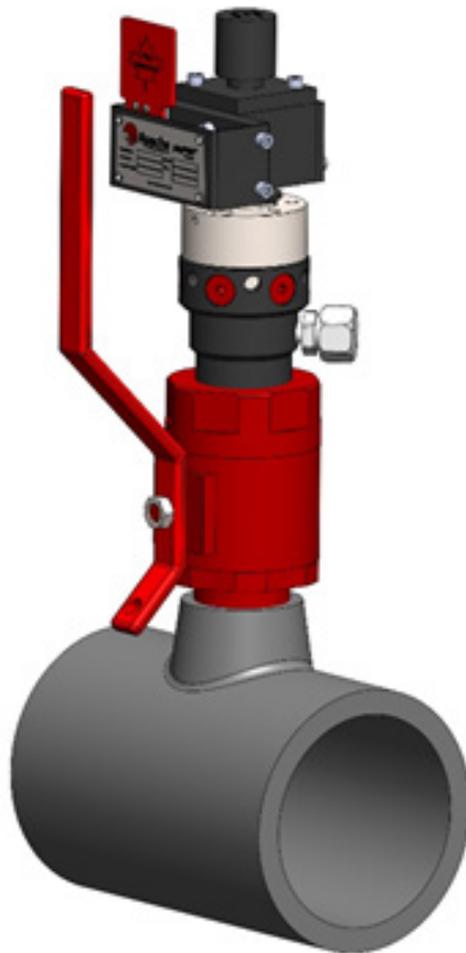


INSTALLATION, OPERATION, MAINTENANCE MANUAL FOR

SERIES 67

pigPRO™ ISOLATION PIG DETECTOR



SERIES 67 pigPRO™ INSTALLATION, OPERATION, MAINTENANCE MANUAL

INTRODUCTION

This manual covers the Non-Pressurized Line Installation, the removal and the re-installation of the series 67 pigPRO™ onto a pipeline. Please read the entire manual including Notices so that you are familiar with all applicable safety precautions before beginning an installation or removal of the pigPRO™.

A. NON-PRESSURIZED LINE INSTALLATION

1. A 2" NPT 3000 psi thread-O-let is to be welded to pipeline. Inspect the internal thread of the thread-O-let and the bottom threads of the Isolation ball valve to ensure they are in good condition.
2. Apply thread sealant to bottom 2" NPT Male threads of Isolation Ball Valve (tube of SWAK is supplied or other as per project requirements) and tighten clockwise (CW) into the 2" 3000 psi thread-O-let. Use pipe wrench to grip onto the bottom hex on the Isolation Ball Valve, to tighten threaded connection. Tighten such that the Ball Valve handle is oriented as required.



FIGURE 1

3. Use an 1/8" hex key wrench (supplied) to loosen the Lock Screw (A) in the collar.
4. Adjust main assembly by turning upper housing clockwise (CW) or counterclockwise (CCW) to attain INSTALL HEIGHT as marked on nameplate. (see Series 67 pigPRO™ Install guide)
5. Tighten Lock Screw (A) to secure main assembly and slide Dust Seal (B) down to contact collar.

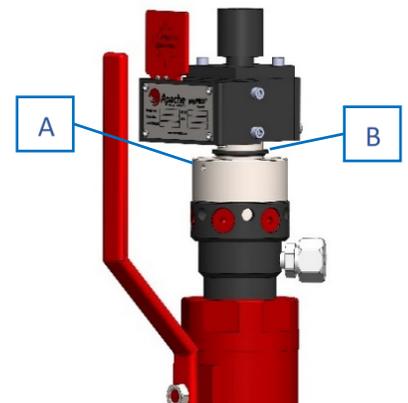


FIGURE 2



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B. REMOVAL AND RE-INSTALLATION WHILE PIPELINE IS UNDER PRESSURE

1. Remove Upper Housing

- a. Remove 2 screws (C) from lid. (Do not remove jam nut or load spring adjuster from lid)
- b. With the flag in the up position, remove lid and reset rod together (D).
- c. Remove flag push rod with steel screw (E).
- d. Remove 2 countersink screws and lift upper housing assembly from lower housing.

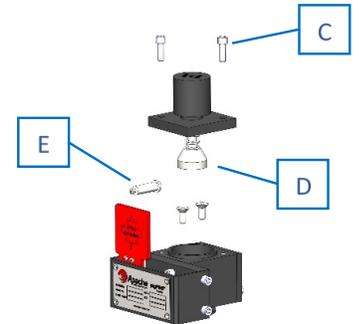


FIGURE 3

2. Install Extraction Cap

- a. Use an 1/8" hex key wrench to loosen the Lock Screw (A) in the Collar.
- b. Install extraction cap (D) onto top of Lower Housing over the 1/8" push rod. Two tabs will fit into slots in Lower Housing
- c. Rotate the extraction cap and lower housing together such that the 3/8" socket head capscrews can be threaded into the Collar.
- d. Install the six 3/8" socket head capscrews with lock washers. Tighten and then turn each capscrew 1/2 of a revolution back. Leave them in this backed off position.

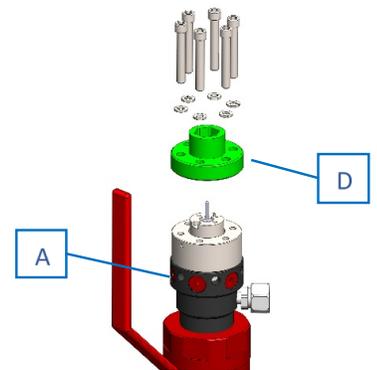


FIGURE 4

3. Jack Tube

- a. Install Jack tube (E) over the extraction cap. Before installing the jack tube apply White Lithium Grease (as supplied) to the internal threads of the jack tube. It must be threaded down until the 6 holes on the bottom align with the tapped holes in the NPT adapter.

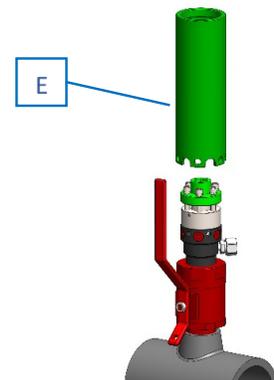


FIGURE 5



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- b. Install 6 hex head bolts (F) through holes in jack tube. Install hex bar (G) into top of extraction cap.

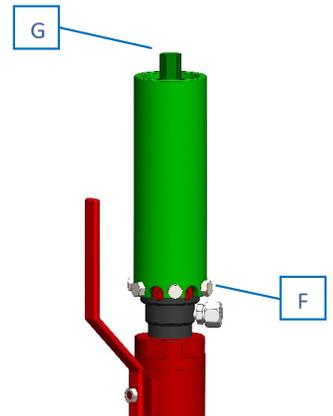


FIGURE 6

4. *Caution: Confirm the extraction cap is in place with 6 cap screws securing it to the collar. Confirm the jack tube is in place with 6 hex bolts secured.*
5. With Jack tube held in place with 6 hex head bolts, the flat socket head capscrews (H) can be removed (use 7/32" hex key wrench, supplied). The flat socket head capscrews are RED and will be visible between the hex head bolts around the bottom of the jack tube. See fig 7.

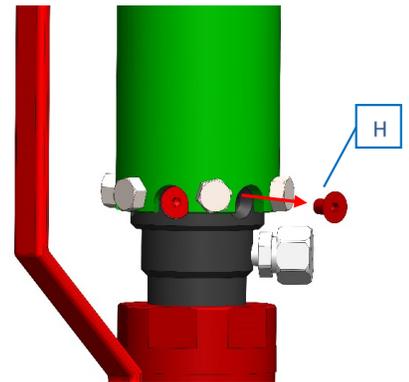


FIGURE 7

6. With the flat socket head capscrews removed, use a wrench to rotate the hex bar counter clockwise (CCW) to remove the Lower Housing Assembly from the line. This will raise the Lower Housing Assembly and Collar out from the NPT adapter. Continue turning until extraction cap reaches its top position. It will hit a shoulder at the top of the jack tube and stops rotating. See figures 8, 9 and 10.

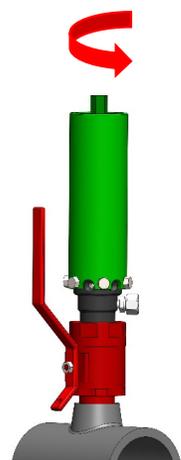


FIGURE 8



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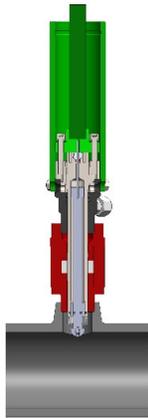


FIGURE 9
Lower Housing in Run Position



FIGURE 10
Lower Housing Extracted

7. Now the lower housing assembly has been rotated and lifted up above the sealing mechanism of the ball valve. Close the ball valve such that the handle is horizontal and lock it in the closed position with a padlock.

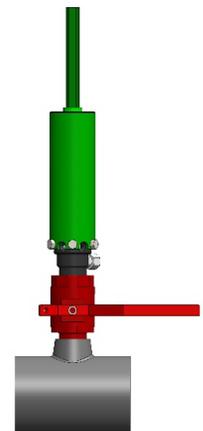


FIGURE 11

8. This will trap a small amount of pressurized pipeline fluid above the ball valve. This pressurized fluid must be bled off. Prevent the grease fitting body from rotating by placing a wrench on the hex section (I) of the body, then removing the vented cap (J) from the grease fitting by turning it CCW.

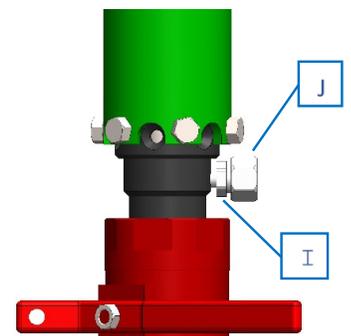


FIGURE 12



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9. Next step is to install the Pressure Relief tool (K), but before installing it onto the grease fitting, be sure the handle of the pressure relief tool is turned as far as possible CCW before installing it onto the grease fitting. Thread the Pressure Relief tool onto the grease fitting, hold the hex section of the grease fitting body with a wrench again to prevent it from moving and tighten the Pressure Relief tool. **CAUTION: If pipeline fluid is hazardous, tubing can be attached to the Pressure Relief tool exhaust port to vent this fluid away from personnel.**
10. Bleed off pressurized pipeline fluid by turning the handle of the pressure relief valve clockwise. This will open the check valve in the grease fitting and let the small amount of pressurized pipeline fluid vent. Fluid should vent for just a moment. If it continues to vent pipeline fluid, this indicates the ball valve is faulty. Turn handle on Pressure Relief Valve Counter Clockwise to stop venting pipe line fluid. The pipeline will need to be shut down to repair the ball valve).
11. With the ball valve closed, and pressure above the ball valve drained. The pigPRO™ can be disassembled.
 - a. Remove the 6 hex bolts at bottom of jack tube.
 - b. Turn the jack tube CCW to remove it from off the extraction cap.
 - c. Remove the 6 capscrews from the extraction cap and remove the extraction cap
 - d. Now the lower housing assembly (L) can be slid up and out of the NPT Adapter (M). Leaving the Pressure Relief tool (K) opened will help with this.
 - e. Now any part can be repaired as needed including the O-Rings inside the NPT adapter.

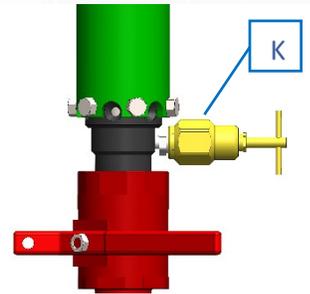


FIGURE 12

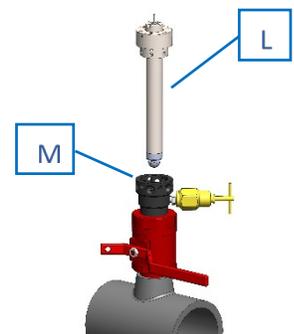


FIGURE 13



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12. Re-Assembly

- a. Clean NPT Adapter and replace O-rings. Grease O-rings and lower housing extension.
- b. With the Pressure Relief tool opened (handle turned CW), install the lower housing with the body, into the NPT adapter approximately 3.5". Twisting back and forth will help move it down. If it contacts the ball of the isolation ball valve, move it back up ½". See Fig 14

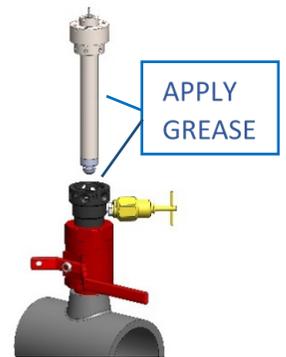


FIGURE 13

- c. Install extraction cap. Use 6 socket head cap screws and lock washers. Tighten all cap screws then turn each one back ½ revolution.

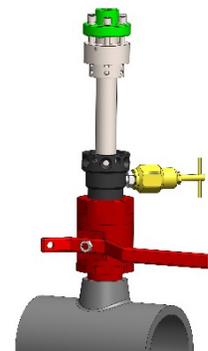


FIGURE 14

- d. Thread Jack tube over extraction cap. Thread the jack tube down until the 6 hex head bolts can be reinstalled. Install the 6 hex head bolts and the hex bar. Remove the Pressure Relief Valve and tighten vented cap onto grease fitting. See fig 15.

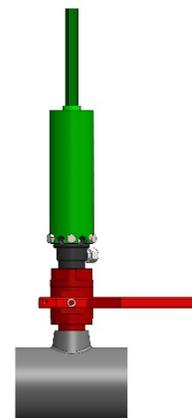


FIGURE 15

- e. *Caution: Look down the jack tube from above and ensure that 6 cap screws are in place on the extraction cap. Double check that 6 hex bolts are tight around bottom of jack tube. Make sure the pressure relief valve has been removed from the grease fitting and that the cap has been installed.*



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- f. Open the ball valve.
- g. Rotate the hex bar CW to drive the lower housing down through the opened ball valve.

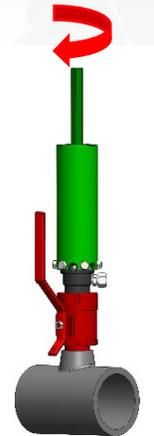


FIGURE 16

- h. Continue to drive the lower housing down until the threaded holes in the body line up with the NPT adapter. Install the 6 red counter sunk capscrews (H).

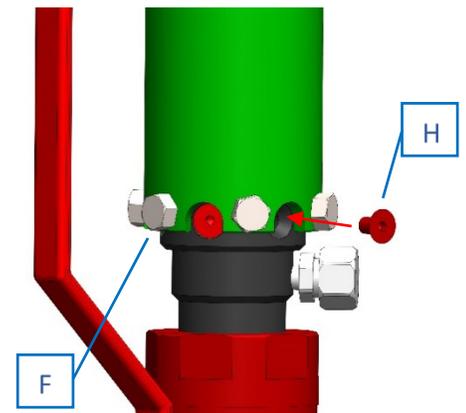


FIGURE 17

13. Remove Jacking Device

- a. Remove the 6 hex head bolts.
- b. Remove the jack tube.
- c. Remove 6 socket head cap screws and the extraction cap.

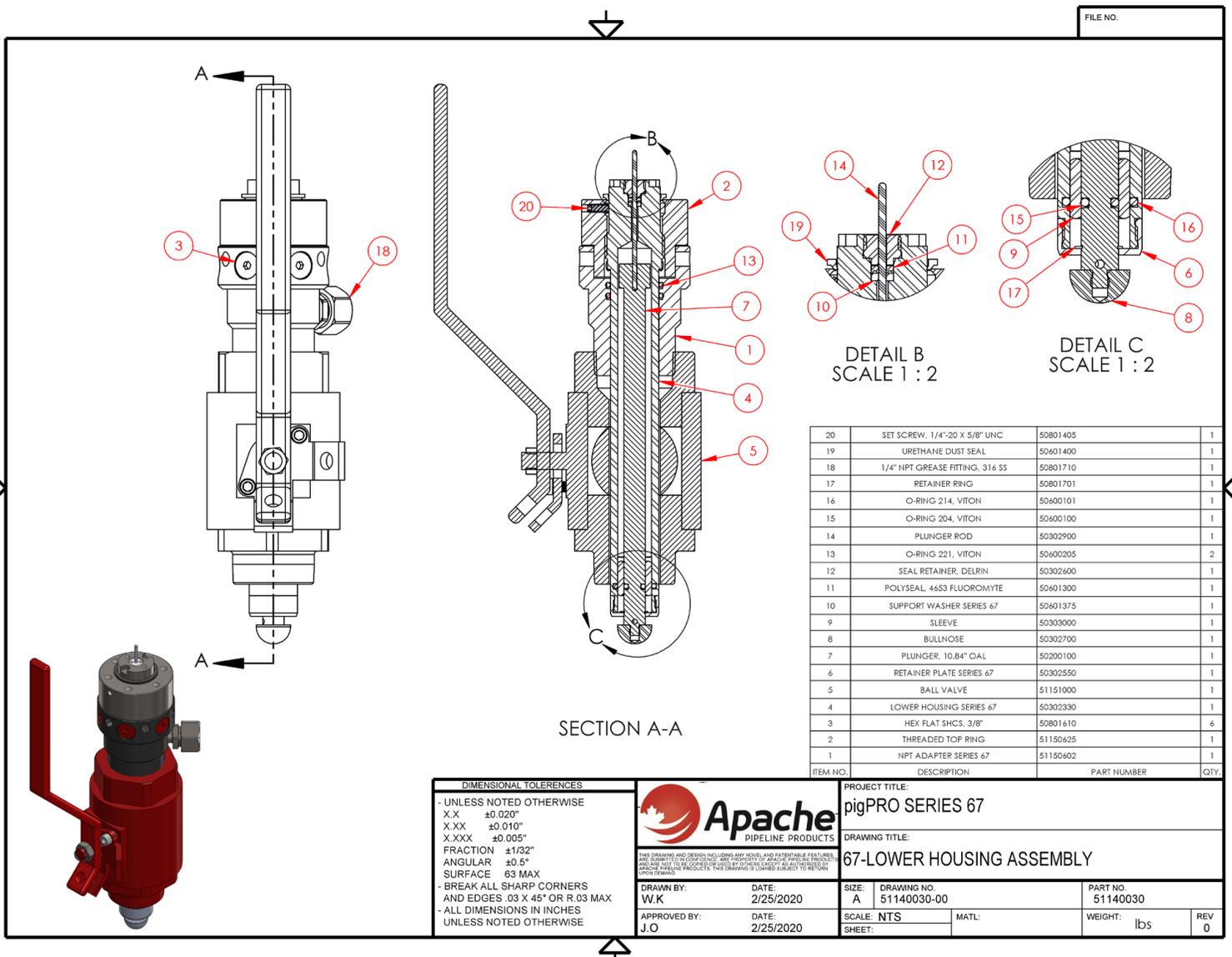


FIGURE 18

- 14. Reinstall the upper housing. After the upper housing is reinstalled, the install height must be reset as per Series 67 pigPRO™ Install guide.



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DIMENSIONAL TOLERANCES
 - UNLESS NOTED OTHERWISE
 X.X ±0.020"
 X.XX ±0.010"
 X.XXX ±0.005"
 FRACTION ±1/32"
 ANGULAR ±0.5°
 SURFACE 63 MAX
 - BREAK ALL SHARP CORNERS AND EDGES .03 X 45° OR R.03 MAX
 - ALL DIMENSIONS IN INCHES UNLESS NOTED OTHERWISE



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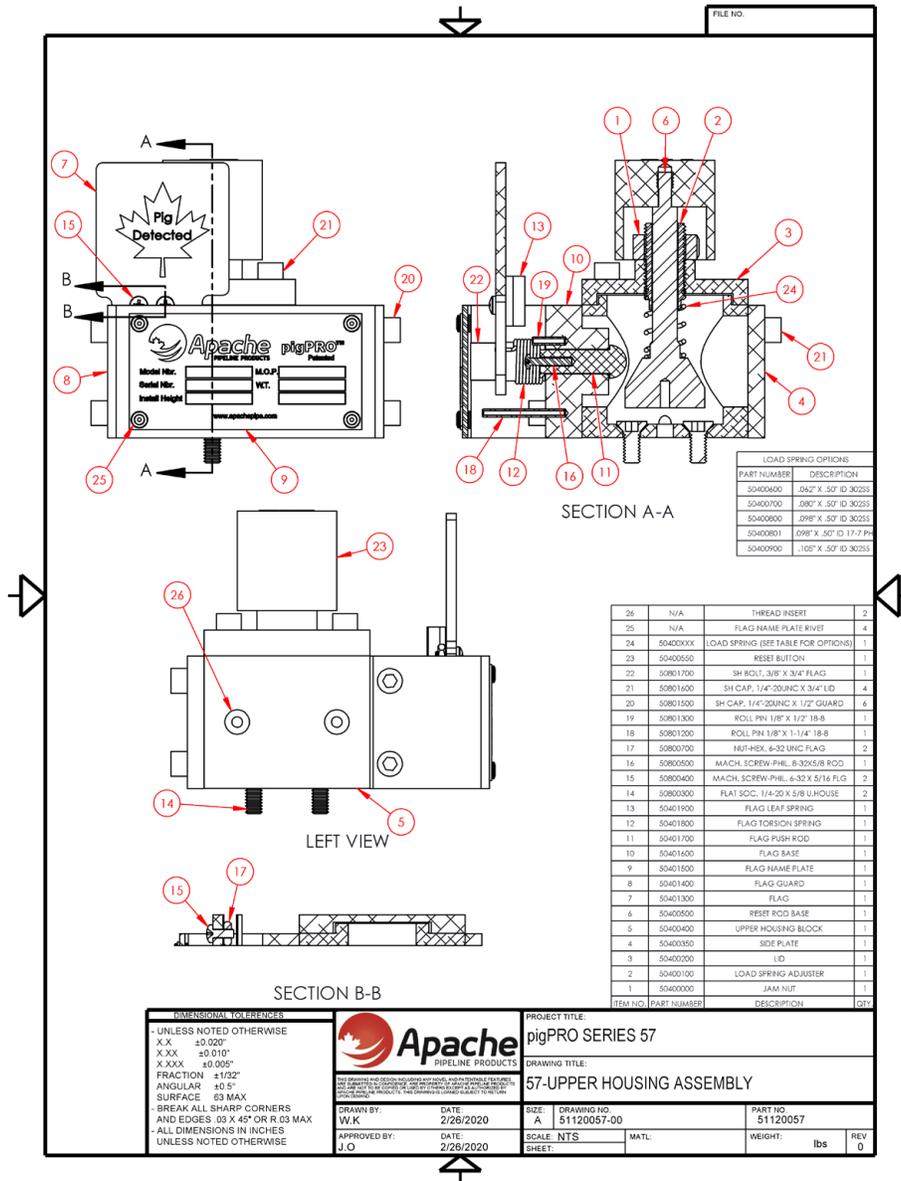
PROJECT TITLE:
pigPRO SERIES 67

DRAWING TITLE:
67-LOWER HOUSING ASSEMBLY

SIZE: A DRAWING NO: 51140030-00 PART NO: 51140030
 SCALE: NTS MATL: WEIGHT: lbs REV 0
 SHEET:



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NOTICE:

- A) Apache Pipeline Products provides training on how to safely remove and re-install Isolation pigPRO™'s on a pressurized line. This procedure should be conducted only by those who have completed this training. When operators are trained and competent, and equipment is in good condition, there is little risk that pipeline fluid could escape. As always, appropriate precautions and planning are required including risk assessment and mitigation.
- B) Policies, Safe Work Practices, required Work Permits, etc. that have been put in place by the pipeline owner are to be consulted and followed before proceeding with any installation, removal or repair of the pigPRO™ pig detector.
- C) When there is no existing connection with a pigPRO™ isolation ball valve, on a pressurized pipeline, a hot-tap service provider will need to install a thread-o-let and the pigPRO™ isolation ball valve. This process is beyond the scope of this manual.

